

**Dr. Peterson**

**Kiwanis Club of Atlanta Presentation**

12:45 p.m. Tuesday, July 14, 2015, Loudermilk Conference Center

Before I get started, I always like to get the lay of the land. How many of you are proud Georgia Tech alumni? For you football fans, how many of you heard about our 2016 season opener against Boston College in Dublin, Ireland? Now that's a real away game! Our student-athletes in all 13 intercollegiate teams are excelling on and off the field. For the first time, Georgia Tech student athletes posted back-to-back terms with a 3.0 mean GPA.

It's always enjoyable to meet with Kiwanis groups. It's especially gratifying to stand before a club of your historic stature. Kiwanis International is celebrating its 100th birthday in 2015, and in just three years the Kiwanis Club of Atlanta will turn 100. Yours is the "Mother Club" that has spawned more than 190 other clubs in the Kiwanis International Georgia District. This club has planted the seeds for an amazing amount of public service that has made our city and state better places to live.

While we're on the subject of history, Georgia Tech is celebrating its 130th anniversary in 2015. For that, we owe thanks to a Georgia state legislator from Macon named Nathaniel Harris, now known as "the father of Georgia Tech," who had the foresight to realize that Georgia needed to improve its technological education and develop a skilled workforce if it was to compete in the Industrial Revolution. We have a residence hall on campus named after him.

Interestingly, Atlanta was one of five cities under consideration as the site for Georgia Tech, along with Macon, Milledgeville, Penfield (in Greene County) ... and Athens. A five-member commission took 23 different votes and finally settled on Atlanta. The commissioners kept voting for their own cities. We think they made the right choice!

If Nathaniel Harris could see what Georgia Tech has become, I think he would be impressed. It has become a destination for many of the best and brightest students in the country and the world. It's also a launching point for scientific and technological advances that are dramatically improving the human experience both here and abroad, and serves as an important resource in economic development.

When I last spoke to your group in September 2010, I had been on the job for about a year and a half. I remember thinking that once I had been at Georgia Tech for a year, I would have a full grasp of everything happening at the Institute. Well, I was wrong. It's so fast-paced and broad-reaching that it's almost impossible to keep up. We're involved in everything from cybersecurity to robotics to medical devices that have the potential to be game-changers in eradicating disease. And, we're making an economic impact throughout the state.

The pace of technological change in our world is dizzying. Just look back 15 years ago, to the year 2000. You were hip if you had a flip phone, which did two things: make and receive calls. Today, your iPhone can also send emails, surf the Internet, take videos, run a GPS and 3D games, and wake you up, plus much more. You carry a multipurpose device in your pocket whose processing power and speed are several times greater than the early computers that took up a whole room. In 2000, if you wanted to watch a rerun of your favorite TV show, you'd have to find it on a VHS tape or DVD.

In 2000, the cloud was that puffy white thing in the sky. Today, 68 percent of companies use cloud services to deliver information technology as a service. Our world and its people are connected by technology in ways our parents couldn't have imagined. In 2000, 361 million people worldwide used the Internet. In 2015, almost 3 billion of the world's 7.3 billion people have done so.

This connectivity affects politics, culture, business, and almost any other activity humans engage in. News no longer flows in a 24-hour cycle or even an 8-hour cycle. Reporting is now almost real-time. Live pictures of a tsunami in Asia can reach us as it hits the shore.

You know you've achieved marketing success when people use your brand name as a verb. Who among us hasn't Googled? And prior to 2004, if you'd told someone you were going to Facebook them, they might have thought you were getting ready to whack them with an encyclopedia.

In their 2015 annual letter to the foundation they started back in 2000, Bill and Melinda Gates made several predictions based upon the technological advances they see coming. Their first prediction was that "Child deaths will go down, and more diseases will be wiped out."

They're putting their money where their mouths are. The Gates Foundation awarded \$2.5 million to Georgia Tech and Micron Biomedical to fund clinical trials for a dissolvable microneedle patch for polio immunization. Georgia Tech has been collaborating with the CDC to develop the microneedles. They will be useful for other diseases, too. The CDC reports that 20 million people are affected by measles every year, and that 400 children die worldwide each day from measles complications.

The patches are about an inch square and contain 100 vaccine-filled needles that are about the diameter of a human hair. They are pressed onto the skin, where the needles quickly dissolve and release the vaccine. There are no sharp needles to dispose of. They can be applied by minimally trained personnel, so they can be used in vaccination programs in remote areas and areas with weaker health-delivery systems.

At Georgia Tech, we're not just thinking about the future. We're shaping it. All over campus, we're doing what we call "Creating the Next." We are doing things that people

don't necessarily associate with Georgia Tech. Some of you might have seen a recent appearance on NBC's Today Show of Professor Gil Weinberg and a robot band from our Center for Music Technology. You can find it online if you didn't see it. A robot named Shimon plays the marimba and can improvise to the music much like a live musician would do, and Shimi robots analyze the music's rhythms and then can dance to the tempo. We are also designing robots that can help a stroke patient shave, explore the ocean floor, and make manufacturing processes more efficient.

In the very important field of cybersecurity, Georgia Tech researchers are working on ways to make Apple devices, including your iPhone, less vulnerable to malware attacks. Our College of Computing recently received a \$2 million grant from the Department of the Navy to fund projects that will bolster defense and other large-scale systems against cyber-attacks.

Five years ago, we completed our 25-year strategic plan, *Designing the Future*. It's always interesting to look ahead and make an educated guess about where the future will take us. So how do we go about "Designing the Future"? By making educated assessments of what that future might look like even as we know that some of what our students learn as freshmen may be obsolete by the time they graduate.

We have tremendous confidence in the people who make Georgia Tech what it is today: the faculty, staff, and students. Last fall, we welcomed the best-qualified, most diverse freshman class for the sixth year in a row. When Fall Semester 2015 begins, we will continue that distinction for a seventh consecutive year. Some stats about our incoming class:

- 1450 SAT average
- Over 40% women in freshman class for first time in Institute history
- 15-year high in African-American students
- Increased in-state enrollment by more than 5%, 86 counties represented

- 49 states (no Montana), 64 countries, representing 9% of the class.

Georgia Tech continues to expand its prominence on the national scene. In early March, we hosted President Barack Obama. At our Spring Commencement last month, we celebrated with about 2,700 graduates in three sessions. Of our roughly 145,000 living alumni, almost 35,000 have graduated in the past seven years. That's a lot of Yellow Jackets adding value to our world!

At Commencement, our speaker lineup included Georgia Tech President Emeritus Wayne Clough, U.S. Secretary of Education Arne Duncan and NATO Supreme Allied Commander Philip Breedlove, a 1977 Georgia Tech graduate.

Gen. Breedlove's love and respect for the Institute shone throughout his address, but one sentence particularly captured the substance of our university: "Georgia Tech is a professional network of innovators, a civic resource, a charitable provider, a forward-leaning, critical-thinking institution, a university that *actively seeks* problems to solve, and challenges to attack and conquer."

Each year our Office of Assessment conducts a *Spring 2015 Career and Salary Survey*. Some of the interesting things we found out that the percentage of job-seeking Georgia Tech BS recipients who reported employment at graduation was about 74%. The median reported salary for Georgia Tech BS graduates was \$65,000 and \$80,000 for MS recipients.

Some have referred to commencement as our largest technology-transfer event. These students have worked hard to prepare to be innovators and leaders, ready to tackle some of society's toughest challenges.

In addition to classroom experiences, Georgia Tech offers a number of chances for students to become engaged, such as a Capstone Design project, and our Invention

Studio, run by students. We partner with business and industry in a number of these projects, including the Spring Convergence Innovation Competition held in April.

Along those lines, Georgia Tech this past spring held our seventh annual InVenture Prize competition. The competition has drawn almost 3,000 participants during its seven years. The finals are broadcast live on Georgia Public Broadcasting, and the atmosphere is very exciting. The prize encourages undergraduate students' interest in invention, innovation, and entrepreneurship. The six finalist teams present their design and their business plan. The winner receives \$20,000, and Georgia Tech provides free licensing. Many winners have gone on to market their products. This spring's winner was a team called FlameTech Grill Defender, which invented a device to make gas grills safer.

Our Capstone Design Expo this spring drew more than 1,000 students and almost 200 teams. The Expo showcases projects from the undergraduate senior design courses in which students work together to design products or tackle real-world problems. The winner was a team called Shunt Doubles — a little play on words there — made up of five biomedical engineering majors. They designed a safe, easy, economical way for caregivers to monitor the effectiveness of shunts used to drain cerebrospinal fluid in the brain. They're exploring to see whether there's a market for their device.

Through our curriculum and student competitions, we're working to instill entrepreneurial confidence in our graduates.

Example: A device called FIXD connects a car to a smartphone via Bluetooth. Rachel Ford (fifth-year BME), John Gattuso (graduated last month in ME), and two others began working on it through the new course last spring called Startup Lab.

FIXD was accepted into the inaugural session of Startup Summer offered by Tech. They launched a Kickstarter campaign. After the Kickstarter campaign, they were

highlighted on FOX national news, and have since gone on to win Cisco's "Internet of Everything" Challenge for 2015. They had their product launch on June 24.

## **Tech Square**

Please allow me to digress here just briefly to recommend to you a recent column by University System of Georgia Regent Larry Walker that appeared in *The Telegraph* in middle Georgia. You can also find it online. I'm not saying this just because he had kind words about Georgia Tech, but that alone makes it worth reading! He pointed out that Georgia is the only state to have two top-20 public universities, the University of Georgia and Georgia Tech. Then he goes on to say the following: "Do you realize how many Fortune 500 companies are located and are locating around Georgia Tech because of the research that the Yellow Jacket engineers are doing?" That's a perfect segue into my next point.

Some of you know about Tech Square, now part of our campus that in the early 2000s had been an area of parking lots and underutilized real estate. Today it's one of the nation's premier research and innovation centers. The momentum there is amazing. The latest additions include Southern Company, Home Depot, Coca-Cola Enterprises, and Worldpay, along with AT&T Mobility and NCR.

These large-company "innovation centers" are able to interact with the talent and expertise that exist at Georgia Tech in our students, faculty and staff, and everybody benefits.

Georgia Tech is moving forward with the Tech Square expansion project. The High Performance Computing Center will support leading-edge research programs in computing and advanced big data analytics.

- Portman Holdings was selected as the project developer
- 750,000 sq. foot, located between Spring Street and West Peachtree Street near

the Scheller College of Business and the Georgia Tech Hotel.

- Georgia Tech will be an anchor tenant, taking one-half of the new development. (computing, big-data analytics)
- Interdisciplinary, collaborative environment to enhance Tech Square's positive impact in Midtown Atlanta. The HPCC will bring together people in a mixed-use community of innovation, education, and intelligent exchange.

Also in Tech Square is EI<sup>2</sup>, Georgia Tech's primary business outreach organization. In Fiscal 2014, EI<sup>2</sup> helped about 1,800 Georgia manufacturing companies reduce operating costs by \$36 million, increase sales by \$191 million, and create or save 950 jobs.

Last month, we took our seventh summer tour of Georgia since Val and I arrived at Georgia Tech. Our weeklong trip took us south to Meriwether County and north to the state line in Walker County. We traveled 650 miles through nearly 30 counties, with 25 separate meetings, tours and events in 13 cities. We met with businesses, lawmakers, editorial boards, alumni, members of the Board of Regents and others. Every summer, we tour a different section of the state, and in the seven years we have covered 4,650 miles.

While the pace is demanding, we always look forward to the opportunity to visit with friends and leaders throughout the state to listen, learn, and share the exciting things happening at Georgia Tech, both on our Atlanta campus along with our efforts to help communities throughout the state.

In Atlanta, we are committed to boosting the continuum of learning, keeping your workforce globally competent, and partnering with you to create a brighter future for individuals, companies, and your community.



We're proud to call Atlanta our home, and Georgia Tech is invested in it. We have almost **14,000 alumni in Atlanta**. In addition, almost **2,900 Georgia Tech employees live in Atlanta**, and they **return \$320.6 million in salary** to the city.

We are also invested through Georgia Tech's business outreach arm, the Enterprise Innovation Institute, which I mentioned earlier. The Georgia Manufacturing Extension Partnership (GaMEP) is a division of EI<sup>2</sup> that has worked closely with companies in Atlanta. Just last year, Georgia Tech's Manufacturing Extension Partnership Program (GaMEP) helped **53 manufacturing companies** in the Metro area reduce operating costs by **\$9.5 million**, increase sales by nearly **\$20 million**, creating or saving **144 jobs**.

EI<sup>2</sup> has several success stories in your area, but I'll just tell you about a couple of them. **Atlanta-based Precision Technik** and **The Royster Group** have both benefitted from Georgia Tech's expertise.

Handling dangerous materials such as hazardous compounds and chemical or biological weapons requires high-quality containment systems. Because Precision Technik deals with toxic gases, quality control is a life-or-death issue.

The company developed a patented mobile-containment device that could safely handle a wide range of deteriorated, unstable and unknown containers. Today, its equipment has been operated worldwide for more than a decade. With EI<sup>2</sup>'s help, Precision Technik instituted ISO 9001, an international quality-management system that helps manage the organization's processes and ensures a consistent product that meets customer expectations.

The Royster Group provides executive search and contract staffing services in the private and public sectors and health care industry. For many years, the Atlanta firm has been utilizing the organizational development, financing, and contracting services

of EI<sup>2</sup>'s Minority Business Development Agency Business Center. Royster has achieved significant revenue growth and earned recognition from the Georgia Minority Supplier Development Council as the 2014 Supplier of the Year with sales between \$1 million and \$10 million.

Located only steps away from the southern edge of the Georgia Tech campus, Centennial Place Elementary School (CPE) continues to partner with the Institute to keep its STEM curriculum both relevant and challenging. Last year, more than 50 Georgia Tech students served as tutors for Centennial Place children. Additionally, through its NSF Pre-Teaching project, Georgia Tech will place three more students and future educators as paid interns in Centennial Place classrooms this coming year.

From Georgia Tech's perspective, we like to see our state's K-12 schools put a healthy emphasis on STEM (Science, Technology, Engineering, Mathematics) education, not as a rival to the liberal arts curriculum, but as a complement to it. We offer a variety of enrichment opportunities (particularly in the summer) through our Center for Education Integrating Science, Mathematics & Computing (CEISMC). Often, when I ask our incoming freshmen what sparked their interest in the STEM fields, they say that it was because of a related summer camp or after-school program.

Project ENGAGES is a new high school science education program developed by Georgia Tech in partnership with three minority-serving City of Atlanta public high schools: the all-girls Coretta Scott King Young Women's Leadership Academy, the all-boys B.E.S.T. Academy, and KIPP Atlanta Collegiate, a co-ed high school. The main program goals are to:

- Inspire these students to aspire to a life with wider possibilities than the one from which they are coming.
- Provide an opportunity for these students to do science, not just view science through a textbook.

- Raise the awareness of the students to the world of engineering, science and technology through real-world, hands-on research projects led by topnotch Georgia Tech scientists.
- Improve the schools' current science education program through a teacher-training initiative that immerses teachers in ongoing research within Georgia Tech's research laboratories.

To further encourage STEM enthusiasm in our own backyard, last fall we announced a new partnership with the Atlanta Public Schools, called the "APS Scholar program." Through this program, Georgia Tech now offers automatic acceptance and a four-year in-state tuition scholarship to all Atlanta Public Schools valedictorians and salutatorians who have successfully completed the prerequisite course work and our admission process. This has resulted in a 70 percent increase in the number of applications from APS students, and we will see a 140 percent growth in the number of APS freshmen enrolled this fall.

In closing, I want to tell you about a scholarship program that has come to mean a great deal to me. The G. Wayne Clough Tech Promise Program provides financial support for Georgia residents whose family income falls below 150 percent of the federal poverty level. We believe that any qualified Georgia resident should have access to a Georgia Tech education, regardless of family income. We have about 200 students in the program, and more than 500 Georgia students from 86 counties have benefited from the program.

Through programs like the Tech Promise and many others, we're preparing the next generation of leaders and innovators. Georgia Tech is about changing lives. We're curing diseases. We're revolutionizing manufacturing processes, designing global solutions, and developing and implementing breakthroughs in dozens of areas. We're influencing thinking in science, technology, and policy. We have a great story to tell,

and we're grateful for the part that our home city of Atlanta plays in it. Thank you for allowing me to share with you some of the exciting things going on at Georgia Tech.